EUGENICS AND CONGENITAL DEAF-MUTISM.

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THIS paper is in one sense a Gradgrind paper, insomuch as facts—hard facts—are the foundations upon which it is built, but it is sincerely to be hoped that the salient and cruel facts of congenital deaf-mutism will receive a different treatment in the near future to that meted out by Mr. Gradgrind before he had his eyes opened. It is also to be hoped that the causes which lead to the presence of so many congenital deaf-mutes in the community may be put down once for all rather than, as at present, ignored from those motives of foolish sentimentality which seem to actuate so many people in this country who seem to prefer that they should be buried in Blue Books and official reports.

The facts herein stated are based upon the examination of 691 deaf children of both sexes in the London County Council Schools. Of these, 407 were children who had acquired their deafness after birth, or in whom its origin was doubtful, and 284 were undoubted congenital cases. Of the whole 691, 538 have been subjected, during the past three years, to a careful detailed examination by me in the deaf schools, whilst 153 were examined for admission to special schools and were, therefore, as yet unfit for detailed functional testing. The acquired and doubtful cases have been separated, and only the 284 congenital cases dealt with here. These include 120 boys and 115 girls fully examined, with 21 boys and 28 girls examined for admission.

The difficulties which stand in the way of obtaining accurate

and adequate family histories in cases of congenital deafness are very great, especially in the class from which these children are drawn. To begin with, very few parents know their family histories, medically speaking, beyond that of their own immediate progenitors. As to the knowledge that a wife has of her husband's history (medically speaking, of course) and *vice versâ* it amounts to nothing. Men seem to choose the mothers of their children and girls the fathers of theirs with a touching trust and blind faith, even amongst the higher classes, that are worthy of a better cause. And if the marrying parties know nothing of each other, their parents' knowledge of the collateral branches of their families—often of the highest importance—is even less. Then again, these people often seem to be adepts at concealment and, without always appearing wilfully to mislead, either keep from the enquirer material facts or obstinately preserve an impenetrable and uncompromising silence.

On the other hand, some parents appear to take a misplaced and pernicious pride in their faulty ancestry, and look back upon it as a kind of honour, almost the next best thing to possessing a genius in the pedigree. Such a case is exemplified in a proud father whose first words to me were : " We've four generations of born-deafers, and all on the Missus's side ! " as if he felt that he had done a fine thing in allying himself with a tainted family He could tell me nothing of his wife's collateral branches, and you will regret to hear that he knew nothing about Eugenics. Indeed, these people are so profoundly ignorant of the science, even in its most primitive aspect, that it must be sorrowfully admitted that most of them have never even heard of it.

One's difficulties are even greater when we come to families with the taint of insanity or alcohol, although here again the sojourn of some member of the family in a lunatic asylum is sometimes looked upon as a family distinction, a matter, may be, for congratulation. In many cases, facts of this kind have to be obtained by other means and I have not included any that were in the least doubtful. With regard to poisons other than alcohol, I have nothing to say here, because I have no reliable facts about them. Congenital syphilis is responsible in this country for a comparatively high percentage of acquired deaf-mutism and that

it may be the cause of a certain number of the deaf-born I have not the slightest doubt. But the subject is a very obscure one and difficult to work out at present.

Out of our 284 congenital deaf-mutes, no family history of any kind was obtainable in twenty-one boys and twenty-two girls, and in two boys it was uncertain. This gives a total of forty-three or 15.4 per cent. of the whole. The list includes several cases from the Barnardo Homes, and, therefore, some of them probably had very strong histories, as many of these children are waifs and strays of bad parentage.

In seventy-one boys and sixty-one girls—132 cases, or 42.9 per cent. of the whole—I could obtain no history of deafness or of any fact of importance which might bear upon the cause of the defect. Each of these children was a single instance in families varying from one to fifteen in number. In fifteen only children, one was posthumous, one had a mother of doubtful morality, one was illegitimate, two had lost both parents and one the mother by phthisis. Of sixteen families of two each, one had a "very delicate" brother, another had a sister whose deafness was due to a fall several years after birth, and one was the offspring of a mixed Jewish and Christian union. Of eight families of three, one was illegitimate. Of twenty families of four, one was illegitimate and the fathers in two cases died of phthisis. Of sixteen families of five, one was illegitimate and one had a brother born with a "deformed head." One child was the youngest of twelve, and one of a family of fifteen had lost five near relatives from phthisis.

It will be noted that illegitimacy occurred four times (3.03 per cent.), and that four showed a tuberculous family history. To the latter I am loath to ascribe any importance, save that of bad hygiene and possible inherent family weakness. That one was the youngest of twelve is suspicious, in view of the facts known as to the effects of reproductive exhaustion.

In thirteen families, or 4.5 per cent. of the whole, whilst there were no ascertainable data regarding the presence of other deaf-mutes, there were histories of neurosis or of that racial poison (as Dr. Saleeby has so happily named it), alcohol. The facts of these thirteen families were briefly as follows: The father

of one boy, illegitimate, is in an asylum, one boy's father committed suicide, one boy's paternal aunt died in an asylum, as did the great-aunt (side not stated) of a girl, whose grandfather and uncle died of phthisis; one boy's maternal grandfather died of general paralysis of the insane and one boy had a mentally defective sister. The family history of another boy is especially interesting, both his paternal grandparents died of "paralysis," his father is mentally defective, one paternal uncle has fits, and one paternal aunt died of phthisis; the boy himself is mentally defective and congenitally deaf and he has a mentally defective brother.

As regards *alcohol*, both parents were chronic alcoholics in the cases of two girls, one girl had an alcoholic father, two boys and one girl had alcoholic mothers. The history of one of these cases, a boy, is worth recording: There have been thirteen children, of whom only four are living; of those children concerning whom reliable information could be obtained, one is congenitally deaf, one is an idiot, one is hydrocephalic; there was one twin birth, both children dying, one of fits, the other from neglect.

I now pass on to those children in whom there was a family history of deafness. These are represented by eighty-nine families, or 31.6 per cent. of the whole. In ten of these, however, the history shows acquired deafness only. This deafness was on the father's side in seven cases, on the mother's side in three. These cases may be discarded from our reckoning as, since von Tröltsch has declared (and he has, so far as I know, never been contradicted), that every third person between the ages of 20 and 30 years is more or less deaf in one ear, any history of acquired deafness in the family of a congenital deaf-mute cannot have much bearing on his condition. The elimination of these cases, therefore, leaves us with seventy-nine families, or 24.5 per cent. with histories of congenital deafness. These are distinct from those in which there was consanguinity. I have no doubt that there were really many more families with a history of congenital deaf-mutism among the 284 children under consideration, were it possible to get at the truth with more precision. The number of congenitally deaf in each family was ascertained

to be: one in forty, two in eighteen, three in sixteen, four in four, and five in one family. According to the table published by Mygind in his work on Deaf-Mutism, a table drawn from statistics of 7,062 meaf-mutes from Nassau, Cologne, Magdeburg, Denmark, Saxony, Ireland and Mecklenburg, about 15 per cent. of the marriages which result in deaf-mute offspring produce two or more deaf-mute children. Probably the percentage, could we obtain very accurate statistics, would be found to be greater, for it is only right to mention that, in Mygind's table, many of his statistics include deaf-mutes in general and not congenital cases in particular. Only his Irish statistics refer solely to congenital cases, and in these, out of 3,045 marriages, 2,056 produced one case each, 324 produced 2, 148 3, 38 4, 22 5, 5 6, and one, the enormous number of ten deaf-born children. The percentage of marriages in Ireland (taken in 1881) resulting in more than one deaf-mute was, therefore, 17.7.

Returning to the cases under consideration, both parents were themselves congenitally deaf in seven families, the father only in three, and the mother only in six. Taking these in detail:

In the families in which both father and mother were born deaf, in one of these there was only one offspring similarly affected, in another there were four children, two of which were born deaf. In one family the congenitally deaf members were—both parents, uncle, aunt, and two cousins; in two families both parents and two paternal uncles, and in one family both parents, the maternal grandfather and the maternal aunt.

In the three families in which the father only was congenitally deaf, a paternal aunt, in one a paternal uncle, and in one a paternal nephew and niece were also born deaf.

In the six families in which the mother only was congenitally deaf, she was the only instance noted in one case, her offspring being two, one born deaf and one born both deaf and mentally defective. In two cases both mother and maternal grandmother were born deaf, in one, both mother and maternal grandfather, and in one both mother and maternal aunt. In one instance the deaf-mute traced her defect through three generations, her mother, maternal grandfather, and maternal

great-grandmother being congenital deaf-mutes. The offspring were, in this instance, one girl born deaf and two younger brothers born hearing.

In fifteen families the parents were not themselves born deaf, but there was a family history of congenital deafness in collateral branches. In five of these the deafness was on the father's side, a grandmother in one, an uncle in one, two uncles in one, an aunt in one, and a nephew in one. In six there were on the mother's side, a grandmother, aunt and uncle in one, a great-aunt in one, a grandfather and uncle in one, an aunt in one, an uncle and two aunts in one, and a cousin in one. In four the side is not stated, but the history showed that an aunt was congenitally deaf in one, three cousins in one, one cousin in one, and a cousin's child in one.

Before passing to those cases in which there was consanguinity I would like to draw attention to some histories which demonstrate forcibly the necessity for bringing the principles of Eugenics to bear upon the problem of congenital deafness, although it would need a Eugenic Napoleon to frame a code sufficiently far-reaching to stamp it out. Some of the histories I have already given, and these need not be repeated. The following, however, although included in the parentages just narrated, I have reserved until now in order to accentuate them.

(1) Father and mother born deaf, offspring one boy mentally defective, one boy normal, one girl mentally defective, one boy congenitally deaf.

(2) Father and mother and two paternal uncles born deaf, six children, of which two boys are congenitally deaf.

(3) Father and paternal uncle born deaf, four children, two boys died of phthisis, one boy congenitally deaf and suffering from phthisis, one boy probably congenitally deaf, but not yet old enough for one to judge accurately.

(4) Seven children, two boys and two girls hearing, one boy and one girl born deaf and mentally defective.

(5) Eleven children, of whom one is congenitally deaf, one a congenital cripple, and one a congenital paralytic, all living.

(6) Father and mother stated to be "healthy," one paternal aunt born deaf; eleven children, of which five, who are alternate

offspring, are congenitally deaf, and of whom four have also retinitis pigmentosa, one being already totally blind. (Retinitis pigmentosa is a congenital defect of the eye which leads to total blindness and is closely associated with congenital deafness). This family shows the significance of collateral deaf-mutism.

Consanguinity was noted in fourteen families, or 4.9 per cent. Of these, the parents were first cousins in nine cases, and the families were as follows:

(1) Only child, illegitimate, mentally defective and congenitally deaf.

(2) Two children, both born deaf.

(3) Seven children, two boys born deaf, one girl mentally defective.

(4) Father born deaf, six children, two born deaf.

(5) Father in asylum, five children, three born deaf.

(6) First three children died at 6 months, 15 weeks, and 4 months respectively, the fourth and fifth were born dead, the sixth is congenitally deaf, and the seventh was a premature child, born dead.

(7) Two children, both born deaf.

(8) Two children, one born deaf.

(9) Seven children, one born deaf, one mentally defective, and one an imbecile.

In one case the parents were second cousins and had eight children, two of which were born deaf.

In the remaining four cases, the degree of cousinship was not ascertained. The families were:

(1) Father and mother born deaf; two children, one congenitally deaf.

(2) Three children, one born deaf.

(3) Three children, one born deaf.

(4) Eight children, one born deaf.

This analysis of the consanguineous families would be incomplete unless an examination were made to ascertain the number of such unions amongst the acquired cases. In the 407 children whose deafness was definitely known to be acquired after birth, or to be doubtful in origin, there were only three, all boys, the offspring of cousin marriages. Their histories were:

(1) Deafness due to meningitis following a fall at one year and ten months. Parents first cousins. Four children, all born normal.

(2) A Jew, deaf from measles at 18 months. Parents cousins (degree not stated). Paternal grandfather congenitally deaf. Six other children, all hearing.

(3) Deafness due to diphtheria and scarlet fever at six years. Parents cousins (degree not stated). Six children, two girls and four boys, of which one girl and three boys are living; all were born normal.

I do not enter further into this matter of consanguineous unions at present, beyond pointing out the difference of percentage in the congenital and acquired cases. Out of 284 of the former there were fourteen families in which the parents were blood relations—4.9 per cent., whilst out of 407 acquired deaf-mutes there were only three such families, or 0.7 per cent.

Having thus analysed the cases which I have brought forward, a sketch of the present state of our knowledge as to the influence of heredity and consanguinity on congenital deaf-mutism must be given, and the sketch must be as brief as possible. To those who wish for fuller information, I would recommend for perusal the works on Deaf-Mutism ot Holger Mygind, with its wealth of statistics from all parts of the world, and Kerr Love, who has probably seen more cases of this defect than any other member of the medical profession.

There are two factors which are sufficiently frequent in the histories of those born deaf to warrant their being regarded as effective causes of congenital deafness, namely, heredity and consanguinity. The opinions expressed as to their value have differed widely, from that of Kramer, who said, with a dogmatism to be deprecated in scientific enquiry, that "Deaf-Mutism is not a hereditary disease," to that of Wilde, who was the first to lay stress upon the opposite view. Kramer would have spoken truly if congenital deafness were a *disease* and not a *defect*. To get at the truth of the matter, one must look at the idea of heredity from a wider point of view than that of mere direct transmission and consider, not the direct ancestry, but the collateral family tree. "It is not enough (says Kerr Love) to seek for the

cause of congenital deafness only in the parents of the affected child. These may hear or be deaf, but that single fact teaches little. Indeed, in the first generation the tendencies of two congenitally deaf parents may so counteract each other that the result is a hearing child; but reversion will ultimately assert itself. The second generation will probably follow the grandfather or grandmother with greater faithfulness, and a deaf grandson will result; or the characters of a prepotent progenitor, separated by many generations may crop up, and an unlooked-for outbreak of deafness may take place. In calculating, therefore, the chances of deafness in a family in which it is feared, our view must not only include the immediate progenitors, but the whole family antecedents on both father's and mother's side. This statement is of practical importance; it takes all, or nearly all, the value out of the proposal to prohibit the intermarriage of the congenitally deaf, for, as has been shown, the hearing members of a deaf-mute connection send down the tendency to deafness with as great certainty as the deaf members."

Congenital deafness is less frequent in the direct ascending line (grandparents and parents); more frequent in the collateral branches (great uncles and great aunts, uncles and aunts, grandparents' cousins, parents' cousins, cousins and second cousins); and most frequent among the brothers and sisters of the deaf-mute. Mygind points out that, out of 553 deaf-mutes, of which 226 were congenital, in Denmark, 110, or about one-fifth, had one or more congenitally deaf brothers and sisters, but only thirty-seven, or about one-fifteenth, had one or more deaf and dumb relations in more remote degrees. That is to say, there was one deaf-mute relative, not including parents, brothers and sisters, to every sixteenth deaf-mute. Those who hold the opinion that congenital deafness is not hereditary cannot say that the defect is as common amongst the relatives of normal people.

The factors which may influence the heredity of deaf-mutism are just as variable as in the case of other abnormalities. The special character of the parent may be present in only a few of the offspring, or an entire generation may be unaffected. I am at present unaware of any detailed work as to the operation of

Mendelian principles in congenital deafness. A considerable number of genealogical tables have been published, but they are all too incomplete to allow of reliable deductions. The famous Ayrshire family is the most complete that I have seen; it gives the descent for eight generations, and shows a total of forty-one deaf-mutes in 171 individuals, but even here the data are incomplete, the branches being scattered in different countries.

Consanguinity of parents, like heredity, has given rise to much dispute. Some consider that such marriages are harmless, taking as their point the beneficial results of inbreeding in domestic animals. Without entering into details it may be pointed out that the conditions are not similar, for with the artificial selective breeding of animals only perfect specimens are admissible, whereas no such precautions are taken in the consanguineous marriages of man. Mitchell, writing in 1865, found that, in 400 deaf-mutes, one in every sixteen had parents who were blood relations, whereas the proportion of cousin marriages in Great Britain is probably about one to sixty or seventy. The figures I have already given as to my own cases show about one in twenty as having cousin parents. In Denmark, according to Mygge, the proportion of cousin marriages is about 3 to 4 per cent. of all marriages, but 6.75 per cent. of the deaf-mutes admitted into the Royal Deaf and Dumb Institution in Copenhagen, were the result of such marriages. A fact which bears upon this question is the proportion of deaf-mutes amongst different religious sects having different marriage customs. Congenital deafness is much more common amongst Jews than amongst Protestants and Roman Catholics, and it is more common amongst Protestants than amongst Roman Catholics. Now, Jews intermarry largely, whilst Roman Catholics discourage cousin marriages and Protestants permit such unions.

There were ten Jews, or 3.4 per cent. amongst our 284 cases, but the real proportion of this people amongst the deaf-mutes in the British Isles is much greater, most of them going to the Jewish Deaf and Dumb School.

Interesting examples of communities are extant which give support to opposite views as to consanguinity. Of these it will be sufficient to quote two. In the Island of St. Kilda, off the

Outer Hebrides, intermarriage has gone on for centuries, yet no case of congenital deafness has ever been known there. On the other hand, at the Island of Martha's Vineyard, on the southern coast of Massachusetts, where intermarriage also obtains, there were, in 1880, twenty congenital deaf-mutes in a population of 500.

A possible explanation of these divergent facts has been suggested by Mackay, based upon the investigations of Thomson into the marriage customs of Fiji. This is so interesting that I propose to go into some detail. In Fiji, cousin marriages are considered from two aspects:

(1) Where the contracting parties are the children of two brothers, or of two sisters;

(2) Where the contracting parties are the children of a brother and a sister respectively.

Thomson has shown that the relationship between the children of two brothers, or of two sisters, is exactly the same as the relationship between the children of the same parents, and therefore, marriage between two such children is strictly forbidden. On the other hand, cousins of opposite sexes, of whom the father of one is brother to the mother of the other, are said to be "concubitants,"[1] that is to say, marriage between them is not only encouraged, it is obligatory. From an examination of census figures, taken with a view to the study of results of Fijian marriages, Thomson found that, as to both fecundity and vitality of offspring, the marriages between concubitants are greatly superior to those between relations (not concubitants), or between fellow-townspeople (not related), or between natives of different towns. In contrast with this, it appeared that marriages between relations (not concubitants) are greatly inferior to those of any other class.

Mackay, whilst pointing out that this consideration, applied to the investigation of deaf-mutism, would mean the preparation of entirely new statistics, believes that, if this were done, it might reconcile present discordant opinions.

However this may be, and whatever opinions may be held

[1] "Concubitancy in the Classificatory System of Relationship"; *Jour. of the Anthropological Institute*, May, 1895.

as regards the influences of heredity and consanguinity in the etiology of congenital deafness, I think it clear, from the analysis of the above 284 cases, that ninety-three of them, or 33.09 per cent. were undoubtedly the result of marriages either amongst those who had cases, direct or collateral, of congenital deaf-mutism in their families, or amongst those who were blood relations. It must be remembered that in forty-three cases, no family history whatever could be obtained, and no doubt, if such information had been available, we should have been able to add several more to our ninety-three. Other observers have put the percentage at about 50, but our 33.09 per cent. is quite sufficient to show that such marriages are to be discouraged. Under the present state of things, however, such discouragement is far away, and the veto of legislation is still more distant, lost in the turmoil of other and far less important legislative vetos. We cannot tell how soon another Moses may arise to say, "Thou shalt not marry into a tainted family." Owing, as I have already pointed out, to the fact that a large part of the value of any proposal to prohibit the intermarriage of the congenitally deaf is lost, because the hearing members of a deaf-mute connection transmit the tendency to deafness with a certainty as great as that of the deaf members, we must endeavour to find some other solution of the problem.

Those who are sufficiently interested in this subject to pursue it further, should read the remarkable work issued by the Volta Bureau on "Marriages of the Deaf in America." This contains statistics of 4,471 such marriages. A study of United States statistics caused Graham Bell, the inventor of the Telephone, to write his pamphlet "On the formation of a Deaf Variety of the Human Species in America!"

It is impossible totally to eradicate congenital deafness, for a certain number will always appear, like other sporadic cases of defect. Their number could, however, be enormously reduced by the application of Eugenic principles. If deaf-mute marriages, the union of blood relations, and the union of alcoholics, syphilitics, and those with a family taint of insanity could be prohibited, that alone would be of great assistance. As, however, we can a present only endeavour to educate public opinion, there are

other items bearing upon the matter which must be stated. One of these is that something, at least, could be done by the better regulation of religious missions to the deaf. I do not wish to make any charge of neglect, or to say anything which can reflect upon or wound the feelings of any person or persons connected with any particular mission, all of which are conducted by high-minded, disinterested men, actuated solely by the unselfish wish of benefiting the deaf community and ameliorating the conditions under which they live. But those worthy people whose life occupation is mission work are often too apt to lose sight of Eugenics in their ardour for their religion. The question is a delicate one and requires careful and tactful handling. The free signing which goes on amongst deaf-mutes cannot be controlled and those in authority are powerless to prevent it. If any teachers of the deaf read this paper they may, perhaps, be prevailed upon to speak on this subject and to relate such of their own experiences as may bear upon it. I would earnestly advocate that it should be a future care of these missions to regulate their meetings with a view to greater restraint. They should hold different sittings for different sexes and, an item of equal importance, they should hold different meetings for the young and for the old.

I hold that the medical profession is, of all callings, the one which should be foremost in Eugenics. The doctor has many grave responsibilities upon his shoulders and not the least important of them is his duty to the State. He has it in his power to educate the public both by precept and by example and he should never neglect an opportunity of using that power. It is a great pity that the doctor is not more often heard in Parliament, not as a crank, but as one who has exceptional opportunities, by education and experience, of giving valuable and practical help to the State. But, for many reasons, the medical profession has, in this country at least, to work silently. Honours fall more readily to the destroyer than to the saviour, and it needs constantly repeated hammering to make the people understand that it is the latter who is really of most worth.

There is another important suggestion which would do much to eliminate the congenital deaf-mute, and this I have left to the last. It is sterilisation. Every congenital deaf-mute

should be sterilised. I am afraid that this statement is a bold one, but I do not fear to say it here. Science has, fortunately for Eugenics, made sterilisation possible with a minimum of danger.

It remains for me to indicate some of the reasons for reducing the number of the congenitally deaf. One of these is the betterment of race, it does not need to be enlarged upon in the EUGENICS REVIEW. Another is that it would afford a larger and freer scope for the education of the acquired deaf-mute. Out of 691 deaf children we have seen that 284, or over 41 per cent. were congenital; were these eliminated we could pay more attention to the 407 acquired cases, could classify them better and get better results. A third reason is a financial one. Recent statistics show that the cost of education, per head, of the deaf-mutes in the London County Council Schools is £31 7*s.* 6*d.* *per annum.* This includes both residential and day scholars; if we deduct the former, the cost is £23 6*s.* 1*d.* The expense of educating the normal child in the elementary schools is £5 3*s.* *per annum*, so that we are paying no less than £18 3*s.* *per annum* extra for the education of one section of our defective children. This is an appeal to the pocket which should have some effect upon the ratepayer.